

Applicant: William G.J. Schofield
For: 2^n-1 SHUFFLING NETWORK

1 1. A 2^n-1 shuffling network comprising:
2 a shuffle exchange network for receiving 2^n-1 data inputs and a dummy input
3 and providing 2^n outputs;
4 a replacement set of 2^n-1 data switches for receiving 2^n-1 outputs from said
5 shuffle exchange network; and
6 a selection circuit for actuating selective ones of said 2^n-1 data switches in said
7 replacement set to replace one of the 2^n-1 outputs of the shuffle exchange network with the 2^{nth}
8 output of the shuffle exchange network.

1 2. The 2^n-1 shuffling network of claim 1 in which said shuffle exchange network
2 includes at least one set of shuffle data switches.

1 3. The 2^n-1 shuffling network of claim 2 in which each set of shuffle data switches
2 includes at least 2^n data switches.

1 4. The 2^n-1 shuffling network of claim 2 in which there are n sets of shuffle data
2 switches.

1 5. The 2^n-1 shuffling network of claim 2 in which there are 2^n data switches in each
2 said set of shuffle data switches.

1 6. The 2^n-1 shuffling network of claim 1 in which each said data switch in said
2 replacement set of data switches includes a two to one multiplexer.

1 7. The 2^n-1 shuffling network of claim 1 in which each said data switch in said set
2 of shuffle data switches includes a two to one multiplexer.

1 8. The 2^n-1 shuffling network of claim 3 in which said shuffle exchange network
2 includes a coding circuit for selectively actuating said sets of data switches in said set of shuffle
3 data switches.

1 9. The 2^n-1 shuffling network of claim 8 in which said coding circuit actuates each
2 set of shuffle data switches independently.

1 10. The 2^n-1 shuffling network of claim 8 in which said coding circuit actuates all of
2 the data switches in a set of shuffle data switches together.

1 11. The 2^n-1 shuffling network of claim 8 in which said coding circuit includes a
2 sequence generator for providing each data input at the data output only once each sequence
3 cycle.

1 12. The 2^n-1 shuffling network of claim 11 in which said sequence generator
2 includes a pseudo random number generator.